Energy from fuel information sheet

Your help is needed to:

- find out how much energy is stored in a litre of each fuel
- explain why one biofuel might be best for blending with conventional fuels.

Conventional fuel:

1000ml petrol produces 2390g CO^2

1000ml petrol = 2390g CO^2

Blend:

900ml **100ml**

900ml petrol produces 2150g CO^2
100ml bioethanol produces 24g CO^2
1000ml blend = 2192g CO^2 produces 8% less CO^2 in total

Note: actual figures depend on vehicle, engine and other factors.

Fuels are energy stores. When most fuels burn they release carbon dioxide and water. Carbon dioxide is a greenhouse gas that contributes to climate change.

Plants absorb carbon dioxide as they grow. Biofuels made from plants can reduce overall carbon dioxide emissions, because when they are burned, they release the carbon dioxide they have stored. This doesn't add extra carbon dioxide to the atmosphere. But each biofuel needs to be harvested, transported and refined in some way. These processes all need energy, so some additional carbon dioxide is always released.

Measuring the energy stored in fuels

The calorimeter measures the energy stored in each fuel. **The unit for energy is the joule: J**. The calorimeter gives slightly different readings each time.

The fuel sample must burn completely, and the water temperature takes a little time to stabilise (stop changing).

Blending biofuels with conventional fuels

Modern engines can make better use of the energy stored in fuel. The best biofuels don't require much energy to process. They can be blended with regular petrol or diesel in larger amounts. Together, these will help to reduce the contribution that transport makes towards climate change.

Your equipment will include:

- a 'calorimeter' which burns the fuel and uses the energy that is released to heat up a set amount of water.